

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (canceled)

2. (canceled)

3. (currently amended): A micro pumping device according to claim 8 [[1]] wherein:
said cartridge comprises at least one component chosen from reservoirs,
channels, and valves, wherein said component contains the flow of said biological fluid.

4. (currently amended): A micro pumping device according to claim 5 [[1]] wherein:
said collapsor comprises at least one bearing chosen from roller bearings and ball
bearings.

5. (currently amended): A micro pumping device for transporting small volumes of
biological fluid comprising: according to claim 4
a collapsor that delivers a compressive force to a deformable material, said
collapsor comprising at least one bearing chosen from roller bearings and
ball bearings; and
a cartridge adapted to receive at least one biological fluid, said cartridge including:
at least one pliable surface, said pliable surface comprising said deformable
material which collapses in response to a compression force
delivered from said collapsor; and
a rigid core adjacent to said pliable surface and opposite said collapsor, said
rigid surface adapted to aid said collapsor in collapsing said pliable
surface;

wherein[[:]] said collapsor comprises a collapsor surface with protrusions having predetermined spacing, said predetermined spacing creating corresponding concavities in said pliable surface as said collapsor collapses said pliable surface against said rigid core, displacement from said corresponding concavities thereby causing a predetermined amount of biological fluid to be delivered from the catridge.

6. (original): A micro pumping device according to claim 5 wherein:

said collapsor surface comprises a circumference of said bearing; said protrusions disposed at predetermined locations about said circumference such that each adjacent pair of protrusions defines a correspondingly predetermined volume.

7. (currently amended): A micro pumping device for transporting small volumes of biological fluid comprising: according to claim 4

a collapsor that delivers a compressive force to a deformable material, said collapsor comprising at least one bearing chosen from roller bearings and ball bearings; and

a cartridge adapted to receive at least one biological fluid, said cartridge including: at least one pliable surface, said pliable surface comprising said deformable material which collapses in response to a compression force delivered from said collapsor; and

a rigid core adjacent to said pliable surface and opposite said collapsor, said rigid surface adapted to aid said collapsor in collapsing said pliable surface;

wherein[[:]] said collapsor comprises a series of plungers, said plungers having a longitudinal axis oriented perpendicular to said pliable surface and said plungers are driven down onto said rigid core along said longitudinal axis such that valves in the cartridge can be opened or maintained in a closed position as a function of a sequence in which the plungers are driven.

8. (currently amended): A micro pumping device for transporting small volumes of biological fluid comprising: according to claim 1

a collapsor that delivers a compressive force to a deformable material, said

collapsor comprising at least one bearing chosen from roller bearings and

ball bearings; and

a cartridge adapted to receive at least one biological fluid, said cartridge including:

at least one pliable surface, said pliable surface comprising said deformable

material which collapses in response to a compression force

delivered from said collapsor; and

a rigid core adjacent to said pliable surface and opposite said collapsor, said

rigid surface adapted to aid said collapsor in collapsing said pliable

surface;

wherein [[:]] said collapsor comprises a singular member shaped as a blade, said member having a longitudinal axis oriented at an acute angle less than perpendicular to said pliable surface so that the blade is positioned at an acute angle of incidence with respect to the pliable surface as the member is driven across the cartridge to displace said biological fluid.

9. (currently amended): A micro pumping device according to claim 8 [[:1]] wherein said device further comprises [[:]] a network comprising staggered channels and reservoirs such that motion in one direction by said collapsor results in a sequential collapse of said staggered channels and reservoirs.

10. (original): A micro pumping device according to claim 9 wherein:

said network comprises a system of check valves preventing backflow through said reservoirs and channels.

11. (original): A micro pumping device according to claim 10 [[:1]] wherein [[:]] said deformable material comprises a self-sealing membrane.

12. (withdrawn): A micro pumping device for transporting biological fluid comprising:
- a first reservoir for containing at least one first biological fluid, said first reservoir comprising a deformable material;
 - a second reservoir for containing a second biological fluid; said second reservoir comprising a deformable material;
 - a mixing chamber to collect a mixture of the first and second biological fluids; said chamber connected to said first reservoir and said second reservoir through a channel, said channel forking into a first leg and a second leg, said first leg connected to said first reservoir, and said second leg connected to said second reservoir, said mixing chamber and said channel comprising a deformable material; and
 - a means for collapsing said first reservoir, said second reservoir, and said channel.
13. (withdrawn): A method of micro pumping biological fluid comprising:
- collapsing a cartridge matrix comprising at least one pliable surface and at least one reservoir and channel, wherein said collapsing is adapted to transport biological fluid contained within said reservoir.
14. (withdrawn): A method of micro pumping according to claim 13 wherein:
- said collapsing comprises sweeping across said at least one pliable surface with at least one of the following: a roller bearing, a ball bearing, or a unitary member.
15. (withdrawn): A method of micro pumping according to claim 13 wherein:
- said collapsing comprises pressing down on said pliable surface with plungers.
16. (withdrawn): An analytical instrument comprising:
- a cartridge adapted to receive at least one biological fluid, said cartridge comprising an analytical system chosen from electrochemical, chemiluminescence, optical, electrical, and mechanical methods, wherein said cartridge comprises a pliable surface; and

a collapsor adapted to transporting small volumes of biological fluid for said analytical system by collapsing said pliable surface with a compression force.

17. (withdrawn): An analytical instrument according to claim 16 wherein:

said collapsor comprises at least one bearing chosen from roller bearings and ball bearings.

18. (withdrawn): An analytical instrument according to claim 16 wherein:

said collapsor comprises a series of plungers, said plungers having a longitudinal axis oriented perpendicular to said pliable surface.

19. (withdrawn): An analytical instrument according to claim 16 wherein:

said collapsor comprises a singular member, said member having a longitudinal axis oriented less than perpendicular to said pliable surface.

20. (new): A micro pumping device according to claim 5 wherein said cartridge comprises at least one component chosen from reservoirs, channels, and valves, wherein said component contains the flow of said biological fluid.

21. (new): A micro pumping device according to claim 7 wherein said cartridge comprises at least one component chosen from reservoirs, channels, and valves, wherein said component contains the flow of said biological fluid.

22. (new): A micro pumping device according to claim 5 wherein said device further comprises a network comprising staggered channels and reservoirs such that motion in one direction by said collapsor results in a sequential collapse of said staggered channels and reservoirs.

23. (new): A micro pumping device according to claim 22 wherein said deformable material comprises a self-sealing membrane.

24. (new): A micro pumping device according to claim 23 wherein said network comprises check valve means for preventing backflow through said reservoirs and channels.

25. (new): A micro pumping device according to claim 7 wherein said device further comprises a network comprising staggered channels and reservoirs such that motion in one direction by said collapsor results in a sequential collapse of said staggered channels and reservoirs.

26. (new): A micro pumping device according to claim 25 wherein said deformable material comprises a self-sealing membrane.

27. (new): A micro pumping device according to claim 26 wherein said network comprises check valve means for preventing backflow through said reservoirs and channels.

28. (new): A micro pumping device according to claim 27 wherein the plungers are driven down onto said rigid member in a sequential manner and maintained in a compressed position to aid the check valves means by sealing off portions of the cartridge directly underneath the plungers to prevent backflow and front seepage from said reservoir.

29. (new): A micro pumping device according to claim 7 wherein said deformable material comprises a self-sealing membrane.

30. (new): A micro pumping device according to claim 8 wherein said deformable material comprises a self-sealing membrane.